

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A method for controlling exposure energy on a wafer substrate, comprising the steps of: controlling the exposure energy with a feedback process control signal of critical dimension, and further controlling the exposure energy with a feed forward process control signal of a compensation amount that compensates for wafer thickness variations.
2. (Original) The method of claim 1, further comprising the step of: combining the feed forward control signal with the feedback process control signal to control the exposure energy.
3. (Original) The method of claim 1, further comprising the step of: supplying the feed forward process control signal by a feed forward controller.
4. (Original) The method of claim 1, further comprising the step of: controlling the exposure energy by a feed forward control signal of an interlayer thickness measurement.
5. (Currently Amended) The method of claim 1, further comprising the step of: controlling the exposure energy by a feed forward control signal of an interlayer thickness measurement remaining after chemical mechanical planarization ~~CMP~~ thereof.

6. (Original) The method of claim 1, further comprising the step of: calculating the compensation amount according to a polynomial function with a coefficient of the function being based on a measurement of a remaining thickness of a planarized interlayer.

7. (Currently Amended) The method of claim 1, further comprising the step of: calculating the feedback process control signal of critical dimension CD measurement of a top layer in a previous manufacturing lot.

8. (Currently Amended) The method of claim 1, further comprising the steps of: calculating the compensation amount according to a polynomial function with a coefficient of the function being based on a measurement of a remaining thickness of a planarized interlayer; and calculating the feedback process control signal of CD critical dimension measurement of a top layer in a previous manufacturing lot.

9. (Original) The method of claim 1, further comprising the steps of: calculating the compensation amount according to a polynomial function with higher order coefficients set at zero.

10. (Original) The method of claim 1, further comprising the steps of: calculating the compensation amount according to a linear function.

11. (Original) The method of claim 1, further comprising the steps of: calculating the compensation amount according to a segmented linear function.

12. (Currently Amended) A system for controlling exposure energy on a wafer substrate, comprising:

a feed forward controller providing a feed forward control signal to an exposure apparatus based on a thickness measurement of an interlayer of the wafer substrate for controlling the exposure energy focused on a top layer of the wafer substrate, and

a feed back controller providing a feed back exposure energy control signal to the exposure apparatus based on CDcriteria dimension measurement of a top layer of a wafer substrate of a previous manufacturing lot.

13. (Original) The system of claim 12, further comprising: a thickness measurement device providing thickness measurement data to the feed forward controller.

14. (Currently Amended) The system of claim 12, further comprising: a CDcriteria dimension measurement device providing CDcriteria dimension measurement data to the feedback controller.

15. (Currently Amended) The system of claim 12, further comprising:
a thickness measurement device providing thickness measurement data to the feed forward controller and
a CDcriteria dimension measurement device providing CDcriteria dimension measurement data to the feedback controller.

16. (Currently Amended) The system of claim 12, further comprising: a thickness measurement device providing thickness measurement data of an STIshallow trench isolation layer of the wafer substrate to the feed forward controller.

17. (Currently Amended) The system of claim 12, further comprising: a CDcriteria dimension measurement device providing CDcriteria dimension measurement data of a poly-gate of wafer substrates of a previous manufacturing lot.

18. (Currently Amended) The system of claim 12, further comprising:
A thickness measurement device providing thickness measurement data of an STIshallow trench isolation layer of the wafer substrate to the feed forward controller,
and
a CDcriteria dimension measurement device providing CDcriteria dimension measurement data of a poly-gate of a previous manufacturing lot.
19. (Original) The system of claim 12 wherein,
the feed forward controller is user configurable by having one or more polynomial coefficients set to zero in a polynomial function model.
20. (Original) The system of claim 12 wherein;
the feed forward controller is user configurable by having one or more polynomial coefficients set to zero in a polynomial function model.
21. (Currently Amended) The system of claim 20, further comprising: a
thickness measurement device providing thickness measurement data of a STIshallow trench isolation layer of the wafer substrate to the feed forward controller.
22. (Currently Amended) The system of claim 20, further comprising: a
CDcriteria dimension measurement device providing CDcriteria dimension measurement data of a poly-gate of wafer substrates of a previous manufacturing lot.